We claim:-

1. A process for the production of flexographic printing plates by means of direct laser engraving by engraving a relief in a laser-engravable flexographic printing element using a laser apparatus which comprises at least

- one unit for holding a cylindrical substrate for flexographic printing elements in which the cylindrical substrate can be rotatably mounted,
- one drive unit for rotating the cylinder,
- one laser head which emits at least one laser beam, the laser head and the holding apparatus with the cylindrical substrate being mounted so as to be displaceable coaxially relative to one another, and
- one suction apparatus,

and in which a laser-engravable flexographic printing element at least comprising a dimensionally stable substrate and an elastomeric, relief-forming layer having a thickness of at least 0.2 mm, comprising at least one elastomeric binder, is used as starting material,

the process comprising at least the following steps:

(a) application of a laser-engravable flexographic printing element to the cylindrical substrate and mounting of the cylindrical substrate in the holding unit,
(b) rotation of the cylindrical substrate,
(c) engraving of a printing relief in relief-forming layer with the aid of the at least one laser beam, the depth of the relief elements to be engraved by the laser being at least 0.03 mm,

wherein the particulate and gaseous degradation products formed in the course of the engraving are taken up by means of the suction apparatus, and the waste gas stream laden with the degradation products is purified by means of a system comprising at least two different filter units, particulate degradation products being deposited in a first filter unit in the presence of a finely divided, nontacky solid by means of a solids filter and remaining gaseous degradation products then being removed oxidatively from the waste gas stream in a second filter unit.

2. A process according to claim 1, wherein the oxidative degradation in the second filter unit is carried out by means of catalytic oxidation.

3. A process according to claim 1, wherein the oxidative degradation in the second filter unit is carried out by means of a low temperature plasma.

4. A process according to claim 1, wherein the finely divided, nontacky solid is at least one such solid selected from the group consisting of loam, $CaCO_3$, active carbon or SiO_2.

5. A process according to claim 1, wherein the amount of the aspirated gas is at least 0.1 m^3 per g of degraded material.

6. A process according to claim 1, wherein the suction apparatus is a hollow body which is connected to the laser head and which comprises at least one back (16) having at least one window (20) for the passage of one or more laser beams, an arbitrarily arranged passage (18) for connection of a suction pipe (19) and a suction orifice (17) located opposite the back, the suction orifice having two arc-shaped edges (21) and (21a) which are located opposite one another and whose radius is adapted to the radius of the substrate cylinder.

7. A process according to claim 6, wherein the distance Δ between the edges and the surface of a flexographic printing element present on the cylinder is from 1 to 20 mm.

8. A process according to any of claims 1 to 7, wherein the laser-engravable flexographic printing element used as starting material comprises components which comprise butadiene and/or isoprene as building blocks.

9. A process according to claim 8, wherein the flexographic printing element comprises binders based on styrene/butadiene and/or styrene/isoprene block copolymers.

10. A process according to claim 8 or 9, wherein the flexographic printing element comprises plasticizers comprising butadiene and/or isoprene.